DIFFRACTION LASER ENCODER APPARATUS

ABSTRACT

A diffraction laser encoder apparatus for positional and movement information measurement of a target made with a diffraction grating. The diffraction laser encoder has a laser light source for generating a source beam. A polarization beam splitter assembly comprises a polarization beam splitter for receiving the source beam for splitting a P-polarization component and an S-polarization component of the source beam into parallel and offset beams. A focusing lens focuses the P-polarization component and the S-polarization component beams onto the target diffraction grating and returning diffracted P-polarization and diffracted S-polarization beams back into the polarization beam splitter for generating a detector beam coaxially containing the diffracted P-polarization and the diffracted S-polarization beams. A detector assembly receives the detector beam for electrical processing and analysis for resolving the positional and movement information. In the process, phase information contained in the diffraction signal returned by the target is analyzed.